

L Number	Hits	Search Text	DB	Time stamp
2	107	photodielectric photo-dielectric photo adj dielectric	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:44
3	238948	photosensitive photo-sensitive photo adj sensitive	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:45
4	352	photoimagable photo-imagable photo adj imagable	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:45
5	86	photoformable photo-formable photo adj formable	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:45
6	235	photopatternable photo-patternable photo adj patternable	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:46
7	63748	pin adj hole pinhole pin-hole	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:47
8	1294	((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:47
9	1379	(photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:47
10	73	((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:48
11	85	((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:49

1	139	BHATT-ASHWINKUMAR-C-.in. BHATT-ASHWINKUMAR-CHINUPRASAD-.in. BHATT-A-C-.in. CAMP-JOHN-.in. CAMP-JOHN-C-.in. CAMP-JOHN-CHRISTOPHER-.in. CAMP-J-C-.in. FLETCHER-MARY-BETH-.in. FLETCHER-M-B-.in. POTTER-KENNETH-L-.in. POTTER-K-L-.in. WELSH-JOHN-A-.in. WELSH-JOHN-.in. WELSH-JOHN-ANDREW-.in. WELSH-J-A-.in.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:53
12	44	((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:53
13	6	((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!))) and (pin adj hole pinhole pin-hole)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 10:56
14	36	((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!))) and (opening hole defect perforation)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 11:02

16	5	((((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!)) (((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and ((pin adj hole pinhole pin-hole))) NOT ((((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!)) and (pin adj hole pinhole pin-hole)) (((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!)) and (opening hole defect perforation)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 11:04
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23	9	((photodielectric photo-dielectric photo adj dielectric) ((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) with (two! double! bilayer\$2 bi-layer\$2 bi adj layer\$2)) and ((pin adj hole pinhole pin-hole) defect perforation)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 11:15
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22	39	<p>(((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) )) same ((pin adj hole pinhole pin-hole) defect perforation)) NOT ((((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!))) and (pin adj hole pinhole pin-hole)) ((((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!))) and (opening hole defect perforation)) ((((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!)) (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!))) and ((pin adj hole pinhole pin-hole))) NOT ((((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!)) and (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!))) and (opening hole defect perforation)) ((((((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (second! or top! or upper!)) (((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) near3 (first! or bottom! or lower!))) and ((pin adj hole pinhole pin-hole))) NOT</p>	<p>USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB</p>	2002/07/11 11:16
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C:\APPS\east\workspace	may 20 6:04 AM	Page 6		

25	2	((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) with (two! double! bilayer\$2 bi-layer\$2 bi adj layer\$2)) SAME (pin adj hole pinhole pin-hole)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 11:22
19	56	((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) with (two! double! bilayer\$2 bi-layer\$2 bi adj layer\$2)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 11:20
26	19	((photodielectric photo-dielectric photo adj dielectric) (((photosensitive photo-sensitive photo adj sensitive) (photoimagable photo-imagable photo adj imagable) (photoformable photo-formable photo adj formable) (photopatternable photo-patternable photo adj patternable)) near3 dielectric) ) SAME (pin adj hole pinhole pin-hole)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/11 11:24
27	1	("5354593").PN.	USPAT; US-PGPUB	2002/07/11 11:24

:VALID \*TDB-ACC-NO: NA9402433

DISCLOSURE TITLE: Double Exposure of Photo-Sensitive  
Insulator for Pin-Hole  
Elimination

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DISCLOSURE TEXT:

Disclosed is an exposure method for reducing defects of  
PCB

(Printed Circuit Board) with photo via holes formed by  
a

negative-type photo-sensitive dielectric. For negative  
type

photo-sensitive dielectric, contamination at exposed  
regions causes

defects such as pin-holes. Such defects can be solved  
by double

exposure with different masks.

- In a photo process in which a negative-type  
photo-sensitive

insulator is used to define vias, contamination on the  
mask, mask

cover film or other parts which lie in the light path  
results in the

formation of pin-holes in the insulator. These  
pin-holes become

serious defects from the point of reliability and  
electrical

performance.

- The defects caused by such contamination can be



eliminated by  
double exposure which comprises a first step for  
exposing the  
insulator with a normal mask with original via size and  
a second step  
for exposing the insulator with the mask with larger  
via size. The  
order of these two masks being used can be reversed.  
- The probability that different contaminations  
hit the same  
location is negligible and thus the pin-holes can be  
eliminated  
effectively by exposing the insulator twice with the  
different masks.  
- The reason why the two masks should have  
different via sizes is  
from the tolerance of mask positioning. The second  
mask has to have  
larger via size to maintain the via size formed by the  
first mask.  
- This method is applicable for any negative  
photo-sensitive  
polymers, for example, etching resist, pattern plating  
resist and so  
on.

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